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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte John W. Evans and J. Thomas Light

Appeal 2009-009364
Application 09/935,982
Technology Center 1600

Oral Hearing Held: Thursday, November 5, 2009

Before EDWARD C. KIMLIN, CHARLES F. WARREN and
MARK NAGUMO, *Administrative Patent Judges*

ON BEHALF OF THE APPELLANTS:

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The above-entitled matter came on for hearing on Thursday, November 5, 2009, commencing at 1:00 p.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, 9th Floor, Hearing Room A, Alexandria, Virginia, before Ashorethea Cleveland, Notary Public.

THE USHER: Calendar Number 39. Number 2009-009364. Mr. Grondahl.

JUDGE KIMLIN: Good afternoon, Mr. Grondahl.

MR. GRONDAHL: Good afternoon.

JUDGE KIMLIN: Our reporter today is Miss Cleveland. You can begin when you're ready.

MR. GRONDAHL: Thank you. Here with me today are the two inventors on this particular application, Mr. Evans and Mr. Light.

JUDGE KIMLIN: Welcome.

MR. GRONDAHL: At the start, there is a procedural matter I just want to bring to the Board's attention. There is another appeal pending on an application for which Mr. Evans is an inventor. The application is serial number 10/629,642.

JUDGE KIMLIN: 629642?

MR. GRONDAHL: Yes. I bring it to the Board's attention because in that case, the Examiner asked us to identify this case as a related, a related appeal; and it came to my attention yesterday that we hadn't crossed and identified that appeal in this case. This case has been identified there but that one had not been identified here.

JUDGE KIMLIN: So, you say that's series 10/629,642?

MR. GRONDAHL: 6-2-9-6-4-2. When I return to my office, I will put a paper in the file.

JUDGE WARREN: And what's the status of that case?

MR. GRONDAHL: It's awaiting a hearing.

JUDGE WARREN: It's also awaiting a hearing?

MR. GRONDAHL: Yes. We didn't think it was related. The Examiner in that case did.

JUDGE KIMLIN: That's fine; as long as you provide us this information.

MR. GRONDAHL: Okay. Thank you.

The claimed invention in this case, as I am sure you know, is directed to a method for producing a non-aqueous heat transfer fluid that has a reduced oral toxicity; and there are two aspects to the invention. One is that it's a non-aqueous heat transfer fluid and that it's got a reduced oral toxicity, unexpectedly reduced oral toxicity.

The limitations of the independent Claim 30 require that an ethylene glycol based, non-aqueous heat transfer fluid be provided.

JUDGE WARREN: Counselor, the Examiner says that "non-aqueous" has the meaning in your spec, most notably, at page 28, line 16, and that paragraph goes to page 29, line 5.

MR. GRONDAHL: Yes.

JUDGE WARREN: That suggests that "non-aqueous" means the water is present only as an impurity and preferably no greater than a starting concentration of about 0.5 weight percent.

MR. GRONDAHL: Yes.

JUDGE WARREN: Which means that given the hygroscopic nature of ethylene glycol that you can have more than 0.5 weight percent.

MR. GRONDAHL: In use, the fluid might -- because it is hygroscopic -- may take on additional water.

The purpose of the invention, the claimed invention, required a non-aqueous heat transfer fluid to start and the specification defines that as a starting fluid that only has .5 percent by weight.

JUDGE WARREN: It says, "preferably." It doesn't say "only," I believe.

MR. GRONDAHL: Well, we have certainly been arguing during the case that it is .5, less than .5; and the Examiner, I think, has used that, as well.

So, I believe we've clarified that during the prosecution history to make clear that the intention is that it be no more than .5 percent.

JUDGE NAGUMO: But your specification says that it's present only as an impurity --

MR. GRONDAHL: Yes.

JUDGE NAGUMO: And on the next page it says that water can just by absorption from the atmosphere, I guess, can take up to as much as 10 percent and you still haven't really changed the cooling.

So, why should we not read the claim broadly and say, okay, it's present only as an impurity, whatever that means. Well, it means up to 10 percent, for example.

MR. GRONDAHL: The remainder of the paragraph talks about what happens because of the hygroscopic nature of the glycol, that additional water might be absorbed.

The reason you start and the reason the fluid that's claimed here starts with no more than .5 percent is because water is generally undesirable; and while recognizing that the fluid can still perform if it does absorb some water after use, you want to minimize the amount of water to start with for the fluid and to get what you want in the fluid.

JUDGE WARREN: How does that affect the process, the claimed process?

MR. GRONDAHL: Well, it affects the claimed process because you have to start with ethylene glycol and propylene glycol that have very low-water contents, less than .5 percent.

So, in order for it to be a non-aqueous heat transfer fluid at the start, it has to have that level of water present only as an impurity and no water actually added to the fluid.

JUDGE WARREN: But if I say I can only have water present as an impurity, then what's to prevent me from having 10 percent water, as much as 10 percent water, say, that crept in as an impurity? Is there some consequence in the process of mixing these things with more water that actually makes a difference in the processing?

MR. GRONDAHL: In the processing itself, I --

JUDGE WARREN: This is a claim for a process. That's why I ask.

MR. GRONDAHL: Yes. Yes. In the process itself, these materials are certainly compatible with water. But as I said, the reason we use non-aqueous, that term, is because we want the fluid to start with no

water or very little water, less than .5 percent; and that is what we have argued during the prosecution and the Examiner has responded on that basis.

So, I would suggest that "non-aqueous" would have to be read, particularly in view of the arguments we have made, to be limited to .5 percent, starting in the fluid that's produced by the process.

JUDGE WARREN: Thank you.

JUDGE KIMLIN: Counselor, you also had the term "non-aqueous heat transfer fluid" in the preamble.

MR. GRONDAHL: Yes.

JUDGE WARREN: Your additives can be molybdate salt and nitrate salt. Wouldn't they have water associated with them when you add them?

MR. GRONDAHL: No. Those additives do not have water associated when you add them. They are soluble in the glycols and that's one of the --

JUDGE KIMLIN: It's a requirement that they have to be non-aqueous; is that right? It wouldn't have any attached water when you put them in, when you mix them?

MR. GRONDAHL: I don't believe they do. The additives are added. I believe we describe the process in the application.

JUDGE KIMLIN: And the propylene glycol. So, it wouldn't have any water associated with it?

MR. GRONDAHL: It may have up to .5 percent because it is hygroscopic.

JUDGE WARREN: Aren't they allowed? Because it's not listed as non-aqueous either.

MR. GRONDAHL: Well, the preamble listed -- says the entire heat transfer fluid is non-aqueous.

JUDGE WARREN: Okay. So, if we can have .5 percent water with the ethylene glycol and .5 percent water with the propylene glycol, then we're up to one percent.

MR. GRONDAHL: That's not the way I believe the claim should be read, Judge Warren.

We say in the preamble it's a method for producing ethylene glycol based, non-aqueous heat transfer fluid. It's ethylene glycol based and the heat transfer fluid as a whole has to have less than .5 percent water --

JUDGE WARREN: So, then you're saying you're just describing this before you use it?

MR. GRONDAHL: I'm sorry.

JUDGE WARREN: You're just describing this? You're essentially claiming a composition in terms of how it's made, is that correct, as opposed to the composition, per se?

MR. GRONDAHL: We're not claiming the composition. Yes. What we're claiming is -- and this goes to the other unexpected result or property of this fluid, is that it unexpectedly reduced the oral toxicity of the --

JUDGE WARREN: I understand that; but you've already given us a range in which that reduction in oral toxicity occurs which is about 5

percent to 30 percent by weight of the propylene glycol based on the total amount of the propylene and ethylene glycols.

MR. GRONDAHL: Yes.

JUDGE WARREN: So, you already have that there.

MR. GRONDAHL: Yes -- when you say we already have it, you --

JUDGE WARREN: Well, you have already specified what your range that provides the reduction of toxicity.

MR. GRONDAHL: Yes. Yes.

JUDGE WARREN: Okay.

MR. GRONDAHL: And as I said, it's a non-aqueous fluid with reduced toxicity. As you said, Judge Warren, one of the other limitations is 5 to 30 percent by weight, the ethylene glycol and propylene glycol.

The references cited by the Examiner in our view all require added water to the heat transfer fluids that are described.

The Remy reference, which claims to anticipate or the Examiner held anticipates the process here -- the fluid described in Remy is -- the only place he describes ethylene glycol and propylene glycol: He talks about putting in a phosphate buffer which requires added water.

The statements made in Remy, broad statements, some combination, some unspecified combinations of ethylene glycol require no added water, don't describe particular combinations of glycols.

In fact, what Remy goes on to say in his examples using ethylene glycol and propylene glycol, he puts in a phosphate buffer which requires added water and therefore can't anticipate this claim.

In addition, and another reason Remy can't anticipate the claim and does not anticipate the claim is that the phosphate buffer is not soluble in ethylene glycol and propylene glycol, which is why you have the added water; and that's another element of the --

JUDGE WARREN: Can you point out where you find that limitation in Remy?

MR. GRONDAHL: Pardon?

JUDGE WARREN: Can you point out where you find that disclosure in Remy, that if ethylene glycol and propylene glycol are mixed there has to be phosphoric acid added and so therefore there has to be water?

MR. GRONDAHL: It's in his example where he uses ethylene glycol and propylene glycol. The only example he provides has one part water and phosphate buffer added.

JUDGE WARREN: Where he says he prefers, where he has preferably a mixture of at least 30 weight percent propylene glycol and from 0.1 to 70 weight percent of ethylene glycol, he has no requirement there for water, and he says that phosphoric acid is added only if the initial pH value of the alkylene glycol base fluid is too alkylene. So --

MR. GRONDAHL: I believe we're talking about page five of Remy. I want to make sure we're talking about the same passage.

JUDGE WARREN: The preference for the mixture of propylene glycol and ethylene glycol is on page four. The preference for less than about one weight percent of water is at the bottom of page five, which essentially is no water, according to the reference.

MR. GRONDAHL: Yes.

JUDGE WARREN: And the optional addition of phosphoric acid is on page six.

MR. GRONDAHL: And what happens is, the way Remy walks through and describes the fluids that he's describing there -- he starts out on page four saying that preferably the alkylene glycol is a mixture, can be propylene glycol or a mixture. Then he goes on to talk about the corrosion inhibitors employed and he mentions phosphoric acid.

The portion of Remy that you point to at the bottom of page five, he is not -- he doesn't talk about ethylene glycol and propylene glycol. He switches back to just alkylene glycol generally. He says, most preferably the alkylene glycol is used with essentially no water. So, he is again back to some unspecified ethylene glycol or mixture.

But when he talks about ethylene glycol and propylene glycol together, there's phosphoric acid and there's water.

Even on page four, below the passage that you pointed to, when he talks about the corrosion inhibitor combination, right after he talks about ethylene glycol and propylene glycol, he mentions phosphoric acid.

So, Remy is teaching that for ethylene glycol and propylene glycol, you've got to have a buffer and that buffer is going to require water. That was consistent with what was known at the time; and Remy talked about the fact that uninhibited and hydrous glycols are undesirable because of the corrosion that they would cause.

So, Remy, when he talks generally and generically about alkylene glycols, says no water but doesn't really specify which alkylene glycols that would apply to.

JUDGE WARREN: Well, counselor, if the reference essentially mixes essentially the same ingredients that you do in the manner that you claim, why wouldn't Remy, and the idea that he doesn't have to have any phosphoric acid there essentially describe your claim method to one skilled in the art?

MR. GRONDAHL: Because what Remy describes for ethylene glycol and propylene glycol is the use of phosphoric acid and water to buffer that which would not be a non-aqueous heat transfer fluid and it would contain an additive that requires water to function.

So, what Remy describes for the specific combination claimed here, the only specific combination he shows is ethylene glycol and propylene glycol where he described phosphoric acid and water.

JUDGE NAGUMO: Is there evidence in the record that .5 weight percent water would be insufficient for phosphoric acid to perform its intended function? Because under your construction, I can have up to .5 water.

MR. GRONDAHL: Yes.

JUDGE NAGUMO: Under a broader construction argument it's quite a bit larger. But is there evidence in the record here that shows that .5 water would be insufficient for the phosphoric acid to perform its function and therefore outside the scope?

MR. GRONDAHL: There is no evidence in the record directly related to that point. However, I point out as described in the specification, the non-aqueous heat transfer fluid only has water present as an impurity, again, because of the hygroscopic nature of the materials.

Remy, on top of whatever might be there as an impurity, is adding another one percent of water in order to buffer this phosphoric acid and for the phosphoric acid to function.

So, there's no direct evidence about whether .5 percent would function. I would point out that Remy doesn't use .5 percent. He uses one percent and adds it and it's not present there merely as an impurity due to the hygroscopic nature of the materials.

So, our position on the anticipation by Remy is that Remy simply does not meet all the limitations of the claim.

The other two references that are cited by the Examiner: Meyer. Meyer is clearly directed to an aqueous heat transfer fluid and says it's mixed with water. Column one, lines 39 through 43 talks about mixing it with water. It's really directed to a prevention of precipitation of salts from glycols mixed with water; and he says that you can have up to 50 percent water, preferably one to 10 percent water. He's really describing a de-icing fluid, not a heat transfer fluid, and he has a polymeric additive to prevent the precipitation of salt when the glycol is added to water.

So, Meyer failed because it's clearly in use. The fluid has added water. In fact, he says to add it to water. It has a polymeric additive which would not be -- although Meyer says, sort of in a throw-away line, that you can use it as a heat transfer fluid, in fact the polymeric additive may be very unsatisfactory to a heat transfer fluid.

JUDGE WARREN: But your method, counsel, is a method for producing a composition. It's not for a method of using your composition.

MR. GRONDAHL: Well, it's a method for producing a heat transfer, a non-aqueous heat transfer fluid.

JUDGE WARREN: And the reference's composition can't be used as a heat transfer?

MR. GRONDAHL: No; this one would not with the polymeric additive. It would not be satisfactory. In fact, it's really directed to the de-icing fluid. It's clear throughout that that's what he was directing this towards.

JUDGE WARREN: So, all the composition has to do is act as a heat transfer fluid under some condition? It doesn't have to -- I'm not sure what the standard is that you want us to apply in determining what a heat transfer fluid is.

MR. GRONDAHL: Well, it would be a fluid that -- and it's discussed in the specification, the properties of a good heat transfer fluid, the viscosity, for example, being an important characteristic. The whole purpose of Meyer is to increase the viscosity which the specification clearly states is undesirable in a heat transfer fluid.

The specification goes through the desirable physical characteristics in detail of a heat transfer fluid and what's desired in a heat transfer fluid in terms of physical characteristics.

JUDGE WARREN: It says here that this composition is useful as an antifreeze fluid and heat transfer applications.

MR. GRONDAHL: It says that. It says that but in fact the increase in the viscosity would not make it satisfactory for a heat transfer fluid. How that worked its way into the Meyer patent is unclear; but you've

got to read this from the point of view of someone skilled in the art, and someone skilled in the art would recognize --

JUDGE NAGUMO: What evidence do you have that viscosity is beyond the range of what the art recognizes as a useful heat transfer fluid?

MR. GRONDAHL: I believe there's a declaration from Mr. Evans. I'm trying to think whether he discussed that. He discussed many things. The specification itself calls out the desirable properties of a heat transfer fluid.

JUDGE NAGUMO: Not necessarily evidence of what the art recognizes as a heat transfer fluid; and the Examiner is entitled to rely on the disclosure in patents absent countervailing evidence that it wouldn't be suitable.

So, you've got a reference that says their invention at least in certain embodiments is useful as a heat transfer fluid, and I'm not sure I'm seeing anything in the claim that necessarily excludes other materials, in particular the thickening polymer.

MR. GRONDAHL: Well, again, I think that -- what I would suggest in the claim it does, that is the heat transfer fluid -- I understand your point certainly about the Examiner not necessarily needing to or taking the reference at face value.

I think if you read the reference in its entirety, which is also required, in its entirety it's clear that what is really being discussed is de-icing fluid where viscosity is very desirable. High viscosity is very desirable.

So, one skilled in the art I believe would see that having a high viscosity heat transfer fluid would not be desirable. It's hard to pump. Gums up the works, if you will.

Again, I come back to Meyer. It's clearly an aqueous heat transfer fluid in use. He adds it to water.

And again, Wood is similar. In fact, Wood says that the fluid necessarily contains sodium metasilicate which is not soluble in either ethylene glycol or propylene glycol and requires water to be present, to be added.

In fact, what Wood describes when he talks about having little or no water present, he talks about a concentrate; not the fluid, not the heat transfer fluid. It's a concentrate that's then diluted further in use which you have to do with sodium metasilicate.

JUDGE WARREN: But the claim reads on a concentrate.

MR. GRONDAHL: Well, it doesn't read on a concentrate in a sense that you don't -- and if it's fluid, you don't add any water to it. It's a heat transfer fluid, a non-aqueous heat transfer fluid.

JUDGE WARREN: It's still a concentrate.

MR. GRONDAHL: Well, you don't add anything in use. You use it as it is, as a non-aqueous heat transfer fluid. You don't add water to it, which Wood requires. Wood says in use, it's a standard aqueous heat transfer --

JUDGE WARREN: But your specification says you can have up to 10 percent weight water in use.

MR. GRONDAHL: Again, we come back to the claim construction issue that you pointed out at the beginning: what's meant by a non-aqueous heat transfer fluid? And it's less than .5 percent water as an impurity in the starting fluid.

We recognize that water can end up in the fluid. The only point we're trying to make in that passage is that if a little bit of water leaks in, this fluid will still function in terms of its physical characteristics.

The starting fluid and the fluid that's claimed here is a fluid that has less than .5 percent water present as an impurity. What happens when those are in use is what the "up to 10 percent" refers to in the specification.

So, in sum, it's our belief that none of these references anticipate or render the claimed process obvious. They all describe fluids that require added water, require additives that are not soluble in the alcohols or require water to function; and for those reasons, we think that the Examiner's rejection should be reversed.

Are there any other questions?

JUDGE WARREN: One more question.

MR. GRONDAHL: Yes.

JUDGE WARREN: Your spec discloses, talking about how you prepare the non-aqueous heat transfer fluids. On page 14, it's indicated that you use industrial-grade propylene glycol and ethylene glycol.

MR. GRONDAHL: Mm-hum.

JUDGE WARREN: How anhydrous is industrial-grade glycols?

MR. GRONDAHL: I don't know. Could I ask the inventors?

JUDGE WARREN: Sure.

MR. LIGHT: The spec is below five 100ths of one percent as applied by the manufacturer.

JUDGE WARREN: Thank you.

MR. GRONDAHL: Thank you. Are there any other questions?

(No response.)

MR. GRONDAHL: Thank you.

JUDGE KIMLIN: All right. Thank you for coming.

MR. GRONDAHL: Thank you for your time.

Whereupon, at approximately 1:30 p.m., the proceedings were concluded.